

### REMARKS

## Status of the Claims

Claims 1, 3-12, 14, 16-26, and 28-32 and 34-42 are pending in the application, Claims 1, 3-4, 6-8, 10-11, 14, 16-26, 29, 31, 32, and 35-37 having been amended, new claims 35-37 having been added, and Claims 2, 13, 15, 27, and 33 having been previously canceled. These amendments further clarify the claims and also tend to place the claim set generally in a state similar to that presented when this application was first filed. Minor typographical errors have also been corrected. Please note that Claim 17 has NOT been canceled or “withdrawn from consideration,” as was erroneously indicated under the “Disposition of Claims” section of the Office Action Summary page (form PTOL-326). Also note that new Claims 38-42 respectively generally correspond to the previously canceled Claims 2, 13, 15, 27, and 33.

## 12 | Amendment to the Title

13 Please note that the title has been amended as set forth above, from "LOSSLESS  
14 MANIPULATION OF IMAGES," to "LOSSLESS MANIPULATION OF MEDIA OBJECTS."

15 | Claims Rejected under 35 U.S.C. § 103(a)

16 The Examiner has rejected Claims 1, 3-12, 14, 16, and 18-30 as being unpatentable over Sull  
17 et al. (U.S. Patent Application Publication No. 2002/0069218 hereinafter referred to as "Sull") and  
18 further in view of Wee et al. (U.S. Patent No. 6,553,150 hereinafter referred to as "Wee"). The  
19 Examiner asserts that it would have been obvious to one skilled in the art at the time of the invention  
20 to use the encoding process that indicates how each ICR (independent coding region) is to be "sliced"  
21 (see column 11, lines 10-32 of Wee) to modify editing of multimedia files (section 0002) of Sull  
22 because as detailed in column 11, this process results in optionally editing a portion of the bit stream  
23 without having to completely decode each entire area of interest as indicated by an optional process  
24 block 125. Applicants respectfully disagree with this reasoning and with the rejection of the claims  
25 for the reasons noted below.

26 In the interest of reducing the complexity of the issues for the Examiner to consider in this  
27 response, the following discussion focuses on independent Claims 1, 14, 25, 31, 36, and 37. The  
28 patentability of each dependent claim is not necessarily separately addressed in detail. However,  
29 applicants' decision not to discuss the differences between the cited art and each dependent claim  
30 should not be considered as an admission that applicants concur with the Examiner's conclusion that

1 these dependent claims are not patentable over the cited references. Similarly, applicants' decision  
2 not to discuss differences between the prior art and every claim element, or every comment made by  
3 the Examiner, should not be considered as an admission that applicants concur with the Examiner's  
4 interpretation and assertions regarding those claims. Indeed, applicants believe that all of the  
5 dependent claims patentably distinguish over the references cited. However, a specific traverse of the  
6 rejection of each dependent claim is not required, since dependent claims are patentable for at least  
7 the same reasons as the independent claims from which the dependent claims ultimately depend.

8 *Discussion of Steps (a), (b), and (c)*

9 With regard to independent Claim 1, the Examiner asserts that Sull discloses applicants' step  
10 (a), which previously recited in an earlier amendment "accessing data defining the image to produce  
11 a representation of the image," and step (c), which previously recited in an earlier amendment  
12 "rendering a modified image in accord with the modification to the representation." The Examiner  
13 cites sections 0070, 0523, 0037, and 0081 of Sull in support of his assertion that the reference  
14 discloses step (a) and cites section 0165 of the reference in support of his assertion regarding step (c).  
15 These citations from Sull are reproduced below.

16 [0070] The present invention further provides a new approach to editing video  
17 materials, in which it **only virtually edits the metadata of input videos** to create a  
18 new video, instead of actually editing videos stored as computer files. In the present  
19 invention, the virtual editing is performed either by **copying the metadata of a video**  
20 **segment of interest in an input metafile** or copying only the URI of the segment into  
21 a newly constructed metafile. The present invention provides a way of playing the  
22 newly edited video only with its metadata. The present invention also provides a  
23 system for the virtual editing. The present invention can be applied not only to videos  
stored on CD-ROM, DVD, and hard disk, but also to streaming videos over a network.  
(Emphasis added, Sull, paragraph 0070.)

24 [0523] The content analyzer 4508 analyzes the video, namely the scene of  
25 video frames, to find their type and purpose, the motion vector direction, and face/text,  
etc. Based on this information, the content selection module 4510 and the  
26 manipulation module 4514 transcode the video by selecting adaptively the attention  
area that is defined by a position and size for a rectangular window, for example, in a  
27 video that is intended to fit the size of the respective client display. The system 4500  
will select a dynamically transcoded (for example, scaled and/or cropped) area in the  
28 video without degrading the perceptibility of users. Also, this system has the manual  
editing routine that alters/adjusts manually the position and size of the transcoded area  
29 by the publisher and author. (Sull, paragraph 0523.)

1 [0037] When an image is transmitted to a variety of client devices with  
2 different display sizes, a scaling mechanism, such as format/resolution change, bit-  
3 wise data size reduction, and object dropping, is needed. More specifically, when an  
4 image is transmitted to a variety of client devices with different display sizes, a system  
5 should *generate a transcoded (e.g., scaled and cropped) image to fit the size of the*  
6 *respective client display.* The extent of transcoding depends on the type of objects  
7 embedded in the image, such as cards, bridges, face, and so forth. Consider, for  
8 example, an image containing an embedded text or a human face. If the display size of  
9 a client device is smaller than the size of the image, sub-sampling and/or cropping to  
10 fit the client display must reduce the spatial resolution of the image. Users very often  
11 in such a case have difficulty in recognizing the text or the human face due to the  
12 excessive resolution reduction. Although the importance value may be used to provide  
13 information on which part of the image can be cropped, it does not provide a  
14 quantified measure of perceptibility indicating the degree of allowable transcoding.  
For example, the prior art does not provide the quantitative information on the  
allowable compression factor with which the important regions can be compressed  
while preserving the minimum fidelity that an author or a publisher intended. The  
InfoPyramid does not provide either the quantitative information about how much the  
spatial resolution of the image can be reduced or ensure that the user will perceive the  
transcoded image as the author or publisher initially intended. (Sull, paragraph 0037.)

15 [0081] The present invention also provides a novel scheme for generating  
16 transcoded (scaled and cropped) image to fit the size of the respective client display  
17 when an image is transmitted to a variety of client devices with different display sizes.  
The scheme has two key components: 1) perceptual hint for each image block, and 2)  
18 an image transcoding algorithm. For a given semantically important block in an  
image, the perceptual hint provides the information on the minimum allowable spatial  
19 resolution. Actually, it provides a quantitative information on how much the spatial  
resolution of the image can be reduced while ensuring that the user will perceive the  
20 transcoded image as the author or publisher want to represent it. The image  
21 transcoding algorithm that is basically a content adaptation process selects the best  
image representation to meet the client capabilities while delivering the largest content  
22 value. The content adaptation algorithm is modeled as a resource allocation problem to  
23 maximize the content value. (Sull, paragraph 0081.)

24 [0165] Finally, the indexing methods of the present invention are enhanced by  
25 the unique modification of visual rhythm techniques that are part of other methods of  
the present invention. Modification of prior art visual rhythm techniques enable the  
26 system of the present invention to capture text information in the form of captions that  
are embedded into multimedia information, and even from video streams as they are  
27 broadcast, so that text information about the multimedia information can be included  
in the multimedia bookmarks of the present invention and utilized for storing,  
28 indexing, searching, retrieving, editing and rendering of the information. (Sull,  
29 paragraph 0165.)

1        However, note that the recitation of steps (a), (b), and (c) indicates at least that: (1) data that  
2 define ***the media object*** are accessed; (2) the data accessed are used to produce a representation of a  
3 media object, producing metadata that define the modification; and (3) a **modified** media object that  
4 is in accord with a modification to the representation is rendered. Thus, it can be appreciated from  
5 these steps that an important aspect of applicants' independent Claim 1 is that it recites the use of not  
6 only **data** but also **metadata**. **Data** is expressly recited in applicants' step (a), and **metadata** is  
7 specifically recited as being produced *to define the modification*. Step (d) recites that the modified  
8 image rendered in accord with the modification to the representation in step (c) is done with metadata  
9 that is stored in applicants' step (d). Also note that another important aspect, a temporal aspect of  
10 applicants' independent Claim 1, is that applicants' metadata does not come into existence until  
11 applicants' step (b) is performed, i.e. the metadata are produced when the modification is done in step  
12 (b). The modified media object is then rendered in accord with the modification to the  
13 representation, as recited in step (d), and the metadata define the modification that is applied when  
14 rendering the media object with the modification.

15        In contrast, the citations to Sull provided by the Examiner fail to teach or suggest all of these  
16 aspects included in the recitation of step (a) - step (c). Note that Sull expressly discloses metadata in  
17 paragraph 0070, clearly indicating that the metadata in Sull are already in existence. Sull teaches in  
18 the bold font citation above that there is virtual editing of the metadata, and this editing is performed  
19 by copying the metadata of a video segment of interest that is in an input metafile. So, the metadata  
20 already exists in Sull and editing is performed on the existing metadata. This is not what applicants'  
21 are reciting in their claim steps (a) through (c). First, data are accessed that define the media object,  
22 and then, a modification is performed that produces metadata that are stored in step (d). Thus, Sull  
23 does not teach or suggest all of the recitation of steps (a) through (c).

24        The Examiner has cited other portions of Sull in addition to paragraph 0070, in support of his  
25 assertion that Sull anticipates these claims. But, applicants note that Sull has expressly utilized the  
26 term "metadata" in explaining how a video file is edited. No mention of the term metadata appears in  
27 the other citations. Accordingly, it is apparent that only paragraph 0070 of Sull is relevant of all the  
28 citations, because that paragraph is the only one of the citations that even discusses metadata. For  
29 example, the discussion of paragraph 0523 of Sull simply discusses a generally conventional  
30 approach to automatically cropping a video frame to enable it to fit on a smaller display device, and

1 mentions in passing that a user can be provided the option to manually edit the automated cropping  
2 and position of the cropped portion of the video frame. There is no mention of metadata in  
3 paragraph 0523 of Sull, and thus, that citation is not particularly relevant to applicants' claims.

4 *Further Discussion of Steps (b) and (d) in Regard to Wee*

5 Significant differences exist between applicants' Claim 1 and the cited art because it does not  
6 appear the cited art teaches the claim recitation of selectively editing the representation of a media  
7 object and storing metadata without modifying the data that define the media object.

8 With respect to independent Claim 1, the Examiner asserts that Wee discloses applicants' step  
9 (b) that previously recited in an earlier amendment "enabling a user to selectively edit the  
10 representation of the image by applying a modification to the representation, wherein the  
11 modification comprises the step of selectively cropping the representation," as well as step (d) that  
12 recited "storing metadata that define the modification applied to the representation in association with  
13 the image, without modifying the data that define the image, said metadata defining a selected size  
14 and a selected position of a crop outline on the representation of the image that is provided to indicate  
15 limits of a cropped image." The Examiner cited column 30, lines 30-53 in support of his assertion  
16 regarding step (b) and cited column 11, lines 10-32 in support of his assertion regarding step (d).  
17 These citations are reproduced below:

18 The second image or sequence 507 is modified as desired by the user; .  
19 preferably, the software affords the user the opportunity to view the second image or  
20 sequence overlaid upon the first image, *and to crop, scale and change the perspective*  
*of the second image*. Accordingly, the second image or sequence is adjusted by the  
21 user to be roughly compatible with its destination within the video input, as indicated  
22 by reference numerals 513 and 515. The software takes the second image or sequence  
23 and maps that information as modified by the user to the dimensions of the decoded  
spatial regions, and fits substitute image data into the original regions of the video  
input (or at least within a selected object of the original regions). Preferably, the user  
24 is afforded the opportunity (via visual display, zoom and a user interface such as a  
mouse) to further crop the substitute image data, or to make that data translucent over  
the original image data. The software also preferably affords the user menu functions  
25 to fit accelerated or decelerated display of the second image (sequence) with respect to  
the original image data (e.g., via frame dropping), or to reverse play of the second  
image (sequence) with respect to the video input, or to splice several image sequences  
26 together to form replacement image data for a region. These functions are indicated by  
reference numerals 517, 519, 521 and 525. (Wee, column 30, lines 30-53.)  
27  
28  
29  
30

Once regions have been selected by the user and defined over the desired frame range of interest, the image processing system then encodes (or transcodes) the selected range of video, as indicated by master function block 115. During this process, if prior compression data is available for data which has been unaltered, that data is preferably re-used to save time that might otherwise be required in computing new compression data for unaltered regions, as indicated by block 117. Details are described below for one system that permits image processing software to track exactly which image frames have altered and in which manner alteration has been occurred. As part of the preferred encoding process and format, a region map can be developed for each frame of a group of pictures ("GOP") which indicates how each ICR is to be "sliced." The GOP is then compressed according to these region maps, and the result of this process ideally is a bit stream with independently coded regions. These operations are indicated, respectively, by blocks 119, 121 and 123. The bit stream is then suitable for storage or transmission, and is inherently suited for optional editing a portion of the bit stream without having to completely decode each entire frame of interest, as indicated by an optional process block 125. (Wee, column 11, lines 10-32.)

However, note that the recitation of applicants' step (b) in Claim 1 indicates that: (1) a user is enabled to selectively edit the representation of the media object; and (2) this editing is carried out by making a modification to the representation, producing metadata that define the modification. Wee does not teach or suggest the step of selectively editing the representation of a media object. The Examiner has not indicated which elements in the above citation to Wee that he believes are equivalent to applicants' claim recitation. However, applicants recite editing the representation (e.g., a display) of a media object (e.g., a first image) and then modifying the representation (e.g., a displayed image) by selectively editing it, producing metadata that define the modification. Wee recites in column 30, lines 4-20 that it may be desired to replace, for example, a graphic showing a billboard with a second image. Specifically, Wee recites the example of replacing an English language sign (in a first image of the billboard) with a Chinese language equivalent in a second image. In contrast, applicants recite in step (b) that it is the representation (e.g., display) of the media object (e.g., an image), not a second image that a user is enabled to selectively edit. This modification to the representation (e.g., an image), might include the step of cropping the representation if the media object is an image. In contrast, Wee teaches that the user is able "*to crop, scale and change the perspective of the second image.*" Thus, Wee is teaching cropping a second image; Wee is not teaching selectively editing the representation of a display of a single media object, which would correspond to the first image in Wee.

1           Applicants' step (d) recites at least three aspects of the claim pertaining to metadata,  
2 including: (1) metadata are stored in association with the media object; (2) the metadata define the  
3 modification applied to the representation of the media object; and (3) the metadata do not modify the  
4 data defining the media object. The Examiner has not indicated which elements he believes are  
5 equivalent to applicants' claim recitation in regard to these three aspects of the claim. If the  
6 Examiner believes that an independently coded region of the selected range of video is equivalent to  
7 metadata, then applicants note that it does not appear that Wee teaches that the ICR (which is  
8 presumably what the Examiner believes corresponds to applicants' recited metadata) do not modify  
9 the data defining the media object. Wee appears to teach that a permanent alteration to the data  
10 defining the media object has taken place. Specifically, Wee gives the example of a desire to edit a  
11 region, for example, to change the color of a particular actor's shirt. Wee teaches that this color  
12 correction may be accomplished by inserting a color corrected signal that is re-encoded into bit  
13 stream format and inserted in the place of the original bit stream data for the set of actors (Wee,  
14 column 9, lines 15-21).

15           Accordingly, the rejection of independent Claim 1 under 35 U.S.C. § 103(a) over Sull and  
16 further in view of Wee should be withdrawn, for the reasons given above, since the combined cited  
17 references do not teach or suggest all of the recitation of independent Claim 1.

18           Claims 3-12 ultimately depend from independent Claim 1. Because dependent claims  
19 inherently include all of the steps or elements of the independent claim from which the dependent  
20 claims ultimately depend, dependent Claims 3-12 are patentable for at least the same reasons  
21 discussed above with regard to independent Claim 1. Accordingly, the rejection of dependent  
22 Claims 3-12 under 35 U.S.C. § 103(a) over Sull and further in view of Wee should be withdrawn.

23 Discussion of the Rejection of Independent Claim 14

24           Independent Claim 14 is directed towards a system for lossless editing of a media object and  
25 subparagraphs (d)(i) through (iv) are similar to steps (a) through (d) of independent Claim 1.  
26 However, this time the Examiner has cited Sull only in regard to his rejection of subparagraph (d)(i)  
27 and has cited Wee in regard to his rejection of subparagraphs (d)(ii), (d)(iii), and (d)(iv). Therefore,  
28 applicants' comments traversing the rejection of independent Claim 1 are equally applicable to show  
29 the patentability of applicants' independent Claim 14.

30

1           Accordingly, the rejection of independent Claim 14 under 35 U.S.C. § 103(a) over Sull and  
2 further in view of Wee should be withdrawn, for the reasons given above, since the combined cited  
3 art does not teach or suggest all of the recitation of independent Claim 14.

4           Claims 16 and 18-24 ultimately depend from independent Claim 14. Because dependent  
5 claims inherently include all of the steps or elements of the independent claim from which the  
6 dependent claims ultimately depend, dependent Claims 16 and 18-24 are patentable for at least the  
7 same reasons discussed above with regard to independent Claim 14. Accordingly, the rejection of  
8 dependent Claims 16 and 18-24 under 35 U.S.C. § 103(a) over Sull and further in view of Wee  
9 should be withdrawn.

10 Discussion of the Rejection of Independent Claim 25

11           Independent Claim 25 is directed towards a method for lossless modification of a media  
12 object. Applicants respectfully disagree with this rejection, at least because Sull and Wee neither  
13 teach nor suggest applicants' step (h), contrary to the Examiner's assertion. The differences between  
14 the recitation of the claim and the cited references that are discussed above in regard to applicants'  
15 Claim 1 also apply in traversing the rejection of Claim 25. In addition, there are further differences  
16 between this claim and the cited art, as discussed below.

17           The Examiner asserts that Wee teaches applicants' step (h), which recites "storing metadata  
18 that now define the second modification of the image, without modifying the data that define the  
19 image," and the Examiner cites column 11, lines 10-32 of Wee in support of this assertion. But  
20 again, as noted above in connection with independent Claim 1, the original bit stream in Wee appears  
21 to be permanently edited since a signal is re-encoded into bit stream format and inserted in the place  
22 of the original bit stream data (Wee, column 9, lines 17-20). Also, Wee does not appear to teach or  
23 suggest a second modification, producing metadata that define the second modification, wherein the  
24 metadata that define the second modification are stored.

25           Accordingly, the rejection of independent Claim 25 under 35 U.S.C. § 103(a) over Sull and  
26 further in view of Wee should be withdrawn, for the reasons given above, since the combined cited  
27 art do not teach or suggest all of the recitation of independent Claim 25.

28           Claims 26, and 28-30 ultimately depend from independent Claim 25. Because dependent  
29 claims inherently include all of the steps or elements of the independent claim from which the  
30 dependent claims ultimately depend, dependent Claims 26 and 28-30 are patentable for at least the

1 same reasons discussed above with regard to independent Claim 25. Accordingly, the rejection of  
2 dependent Claims 26 and 28-30 under 35 U.S.C. § 103(a) over Sull and further in view of Wee  
3 should be withdrawn.

4 Claims Rejected under 35 U.S.C. § 102(e)

5 The Examiner has rejected Claims 31-32 and 34-37 as being anticipated by Sull. The  
6 Examiner asserts that Sull describes each element of applicants' claimed invention. Applicants  
7 respectfully disagree for the reasons noted below.

8 Discussion of the Rejection of Independent Claim 31

9 Independent Claim 31 is directed towards a system for lossless modification of a media object  
10 and generally corresponds to independent method Claim 25. Thus, as explained above in connection  
11 with independent Claim 1, which recites steps similar to step (c)(i) and step (c)(iii), Sull does not  
12 teach or disclose metadata in a manner equivalent to that of applicants' recited claim steps. In  
13 addition, it also follows that the cited reference does not teach step (c)(viii) of Claim 31, because  
14 metadata as defined by Sull exists before any modifications are performed and are not produced as  
15 result of a modification. Further, the metadata that define the modification are not stored by Sull, as  
16 recited in this claim.

17 Accordingly, the rejection of independent Claim 31 under 35 U.S.C. § 102(e) over Sull should  
18 be withdrawn, for the reasons given above, since Sull does not teach all of the recitation of  
19 independent Claim 31.

20 Claims 32 and 34-35 ultimately depend from independent Claim 31. Because dependent  
21 claims inherently include all of the steps or elements of the independent claim from which the  
22 dependent claims ultimately depend, dependent Claims 32 and 34-35 are patentable for at least the  
23 same reasons discussed above with regard to independent Claim 31. Accordingly, the rejection of  
24 dependent Claims 32 and 34-35 under 35 U.S.C. § 102(e) over Sull should be withdrawn.

25 Discussion of the Rejection of Independent Claim 36

26 Independent Claim 36 is directed towards a machine readable medium having a data structure  
27 for lossless modification of a media object. The Examiner asserts that applicants' step (a) is  
28 disclosed by paragraph 0165 with the addition of paragraph 0523 disclosing the cropping element of  
29 applicants' claim limitation. In addition, the Examiner asserts that the applicants' step (b) is  
30 disclosed by sections 0070, 0165, and 0523. However, there is no teaching in Sull of a data structure

1 that stores both **metadata** and the **data** defining the image. Note that data defining a media object  
2 that is used to produce a representation are not the same as the metadata produced to define the  
3 modification of the media object.

4 Accordingly, the rejection of independent Claim 36 under 35 U.S.C. § 102(e) over Sull should  
5 be withdrawn, for the reasons given above, since Sull does not teach all of the recitation of  
6 independent Claim 36.

7 Discussion of the Rejection of Independent Claim 37

8 Independent Claim 37 is directed towards a machine-readable medium having a data structure  
9 for a collection of media objects comprising a substorage. For the reasons presented above in  
10 connection with independent Claim 36, it does not appear that Sull discloses a data structure that  
11 stores both metadata that define a modification and the data defining a media object.

12 Accordingly, the rejection of independent Claim 37 under 35 U.S.C. § 102(e) over Sull should  
13 be withdrawn, for the reasons given above, since Sull does not teach all of the recitation of  
14 independent Claim 37.

15 In view of the Remarks set forth above, it will be apparent that the claims remaining in this  
16 application define a novel and non-obvious invention, and that the application is in condition for  
17 allowance and should be passed to issue without further delay. Should any further questions remain,  
18 the Examiner is invited to telephone applicants' attorney at the number listed below.  
19

20 Respectfully submitted,

21   
22

23  
24 Sabrina K. MacIntyre  
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